

ABSTRACT OF THE DISCLOSURE

A process for providing one or more protected copper elements on a
5 surface of a workpiece is set forth. In accordance with the process, a barrier layer
is applied to the workpiece. If the barrier layer is not suitable as a seed layer for
subsequent electroplating processes, a separate seed layer is applied over the
surface of the barrier layer. One or more copper elements are then electroplated
on selected portions of the seed layer or, if suitable, the barrier layer. If used, the
10 seed layer is then substantially removed. At least a portion of a surface of the
barrier layer is rendered unplatable while leaving the copper elements suitable for
electroplating. A protective layer is then electroplated onto surfaces of the one or
more copper elements.